

CLAIMS

What is Claimed:

1. An isolated polynucleotide comprising a sequence selected from the group consisting of:
 - (a) sequences provided in SEQ ID NOs:128, 129, 132, 160, 167, 168, 254, 358, 370-375, and 431;
 - (b) complements of the sequences provided in SEQ ID NOs:128, 129, 132, 160, 167, 168, 254, 358, 370-375, and 431;
 - (c) sequences consisting of at least 20 contiguous residues of a sequence provided in SEQ ID NOs:128, 129, 132, 160, 167, 168, 254, 358, 370-375, and 431;
 - (d) sequences that hybridize to a sequence provided in SEQ ID NOs:128, 129, 132, 160, 167, 168, 254, 358, 370-375, and 431, under highly stringent conditions;
 - (e) sequences having at least 75% identity to a sequence of SEQ ID NOs:128, 129, 132, 160, 167, 168, 254, 358, 370-375, and 431;
 - (f) sequences having at least 90% identity to a sequence of SEQ ID NOs:128, 129, 132, 160, 167, 168, 254, 358, 370-375, and 431; and
 - (g) degenerate variants of a sequence provided in SEQ ID NOs:128, 129, 132, 160, 167, 168, 254, 358, 370-375, and 431.
2. An isolated polypeptide comprising an amino acid sequence selected from the group consisting of:
 - (a) sequences encoded by a polynucleotide of claim 1; and
 - (b) sequences having at least 70% identity to a sequence encoded by a polynucleotide of claim 1;

(c) sequences having at least 90% identity to a sequence encoded by a polynucleotide of claim 1;

(d) sequences set forth in SEQ ID NOs:161, 169, 170, 226-251, 357, 367, 376-382 and 430.

3. An expression vector comprising a polynucleotide of claim 1 operably linked to an expression control sequence.

4. A host cell transformed or transfected with an expression vector according to claim 3.

5. An isolated antibody, or antigen-binding fragment thereof, that specifically binds to a polypeptide of claim 2.

6. A method for detecting the presence of a cancer in a patient, comprising the steps of:

(a) obtaining a biological sample from the patient;

(b) contacting the biological sample with a binding agent that binds to a polypeptide of claim 2;

(c) detecting in the sample an amount of polypeptide that binds to the binding agent; and

(d) comparing the amount of polypeptide to a predetermined cut-off value and therefrom determining the presence of a cancer in the patient.

7. A fusion protein comprising at least one polypeptide according to claim 2.

8. An oligonucleotide that hybridizes to a sequence recited in SEQ ID NOs:128, 129, 132, 160, 167, 168, 254, 358, 370-375, and 431 under highly stringent conditions.

9. A method for stimulating and/or expanding T cells specific for a tumor protein, comprising contacting T cells with at least one component selected from the group consisting of:

- (a) polypeptides according to claim 2;
- (b) polynucleotides according to claim 1; and
- (c) antigen-presenting cells that express a polynucleotide according to claim 1,

under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells.

10. An isolated T cell population, comprising T cells prepared according to the method of claim 9.

11. A composition comprising a first component selected from the group consisting of physiologically acceptable carriers and immunostimulants, and a second component selected from the group consisting of:

- (a) polypeptides according to claim 2;
- (b) polynucleotides according to claim 1;
- (c) antibodies according to claim 5;
- (d) fusion proteins according to claim 7;
- (e) T cell populations according to claim 10; and
- (f) antigen presenting cells that express a polypeptide according to claim 2.

12. A method for stimulating an immune response in a patient, comprising administering to the patient a composition of claim 11.
13. A method for the treatment of a lung cancer in a patient, comprising administering to the patient a composition of claim 11.
14. A method for determining the presence of a lung cancer in a patient, comprising the steps of:
- (a) contacting a biological sample obtained from a patient with an oligonucleotide according to claim 8;
 - (b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; and
 - (c) comparing the amount of polynucleotide that hybridizes to the oligonucleotide to a predetermined cut-off value, and therefrom determining the presence of the cancer in the patient.
15. A diagnostic kit comprising at least one oligonucleotide according to claim 8.
16. A diagnostic kit comprising at least one antibody according to claim 5 and a detection reagent, wherein the detection reagent comprises a reporter group.
17. A method for the treatment of lung cancer in a patient, comprising the steps of:
- (a) incubating CD4⁺ and/or CD8⁺ T cells isolated from a patient with at least one component selected from the group consisting of: (i) polypeptides according to claim 2; (ii) polynucleotides according to claim 1; and (iii) antigen presenting cells that express a polypeptide of claim 2, such that T cell proliferate;

(b) administering to the patient an effective amount of the proliferated
T cells,
and thereby inhibiting the development of a cancer in the patient.